Small Business Innovation Research/Small Business Tech Transfer

Stabilized Portable External Cavity Laser (SPECL), Phase II

Completed Technology Project (2016 - 2020)

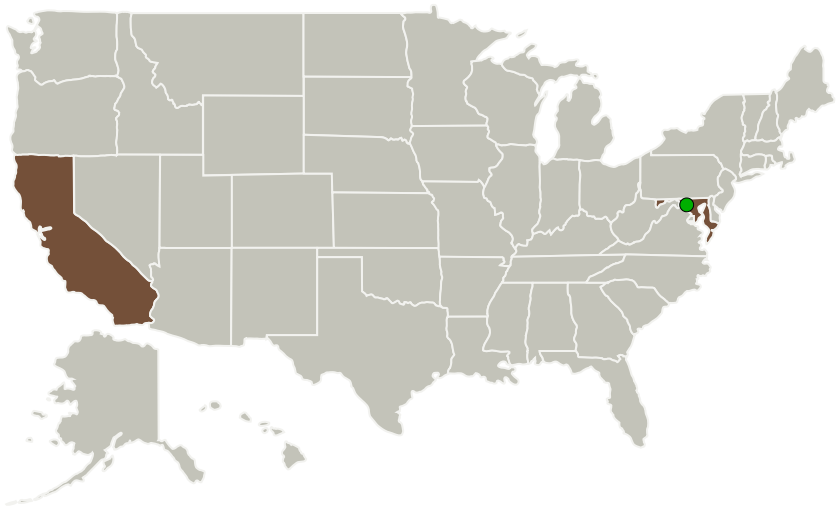
Project Introduction

AOSense will build and test an integrated ultrastable laser module capable of reaching a short-term instability of < 5e-15 @ 1s. The flexible design will allow the module to be adapted for several relevant optical clock wavelengths which utilize external cavity diode lasers. The first unit will operate at 698 nm to address the Sr clock transition.

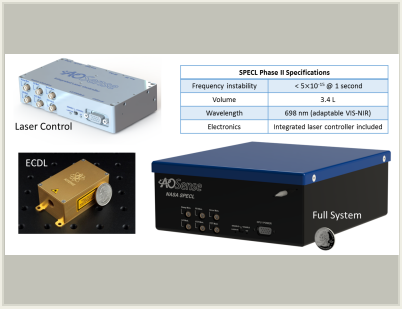
Anticipated Benefits

Optical atomic clocks; Gravitational wave detection with single baseline interferometers; deep space navigation; LIDAR.Secure data routing; communication systems immune to jamming; high resolution coherent radar; extended mission duration in GPS-denied environments; improved system integrity for a future GPS constellation; Quantum computing.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
AOSense, Inc.	Lead Organization	Industry	Sunnyvale, California
Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland



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Completed Technology Project (2016 - 2020)

Primary U.S. Work Locations	
California	Maryland

Project Transitions

September 2016: Project Start

July 2020: Closed out

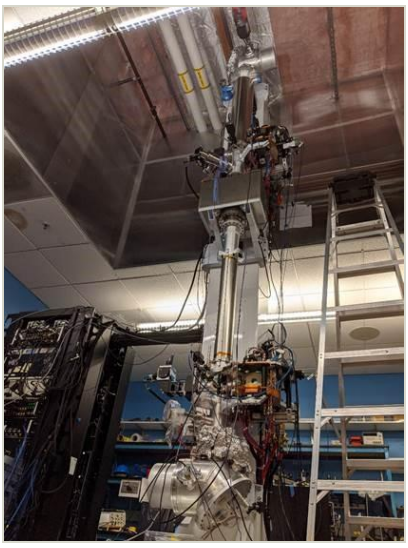
Closeout Documentation:
- Final Summary Chart PDF*(https://techport.nasa.gov/file/138525)*

July 2020: Closed out

Closeout Documentation:
- Final Summary Chart*(https://techport.nasa.gov/file/138526)*

Images

Briefing Chart Image
Stabilized Portable External Cavity Laser (SPECL), Phase II
(https://techport.nasa.gov/image/137188)



Final Summary Chart Image
Stabilized Portable External Cavity Laser (SPECL), Phase II
(https://techport.nasa.gov/image/128256)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
AOSense, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Project Managers:
Joseph Famiglietti
Ritva Keski-kuha

Principal Investigator:
Miao Zhu

Co-Investigator:
Martin J Boyd

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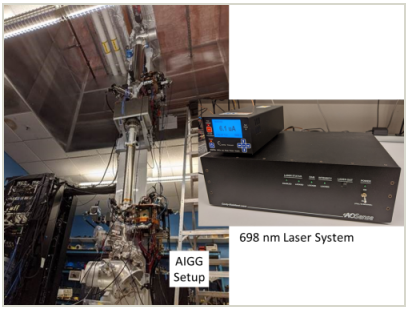
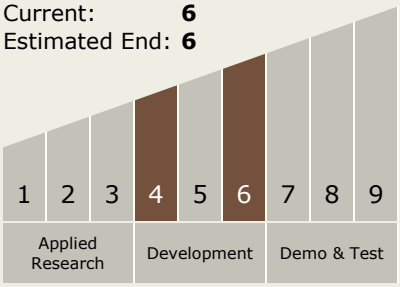


Final Summary Chart Image
Stabilized Portable External Cavity Laser (SPECL), Phase II
(https://techport.nasa.gov/image/130235)

Technology Maturity (TRL)

Start: **4**
Current: **6**
Estimated End: **6**



Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System